

Var. TERRAE-NOVAE: 1.3–4.5 dm. high, with 2–4 (very rarely –6) leaves; raceme during anthesis only 3–10 cm. long; flowers variously colored, from cream-white to crimson; lip 7–10 mm. long; its lobes much less deeply dissected.

Some material from Cape Breton is transitional and it is possible that such specimens have given rise to the report from Cape Breton of *Habenaria leucophaea* (Nutt.) Gray.

GRAY HERBARIUM.

POLYGONUM HYDROPIPEROIDES AND P. OPELOUSANUM

E. E. STANFORD.

(Continued from page 17.)

The present paper proposes under *P. hydropiperoides* four new varieties, one apparently rather widespread throughout Florida, one found in southern California, and two others, represented by a single specimen each, from Sanibel Island, Florida, and from Oklahoma. The latter is stated by the collector's label to be "common"; as to the one from Sanibel Island no such information is available, but it appears to be fully fertile and to possess normal pollen. A number of specimens of variant material have been withheld from publication on account of the suspicion of hybridism engendered by an unusually large proportion of defective pollen, apparent infertility of achenes, too large a proportion of open-type flowers and apparent blending with other species. It is highly improbable that varieties recognized in this paper exhaust the list of admissible geographic varieties. Among possible fields for future geographic research, the southern seaboard states below Virginia and those of the lower Mississippi basin, which are not particularly well represented in the material at hand, suggest attractive possibilities. The species *P. hydropiperoides* would seem to be of unusual interest to students of variation.

The name *Polygonum opelousanum*, without description, was published by Riddell in the New Orleans Medical and Surgical Journal in 1852, and validated as a name by description by Small in 1892. A specimen from Riddell, with a manuscript description which appears never to have been published, is in the Gray Herbarium. Small, in publishing the species, stated: "The species here proposed is most closely related to *P. hydropiperoides*, from which

it differs by its smaller size, more slender habit, and the conspicuously setose bracts [ocreolae]."¹

In the 7th edition of Gray's Manual, *P. opelousanum* was treated as synonymous with *P. hydropiperoides*, and in 1911 Stone treated it as *P. hydropiperoides opelousanum*.² The similarities between *P. opelousanum* and the variable *P. hydropiperoides* are indeed considerable, and there is room for divergence of view as to the systematic rank of the former. Besides the differences mentioned by Small, the plant appears to become an annual in its northward range; the panicles are shorter and more closely flowered, with the flowers and fruits borne on somewhat divergent pedicels, and, in particular, the calyx is little accrescent in fruit, becoming somewhat rhomboid in aspect, closely appressed to the achene, which is usually somewhat shorter in proportion than is that of *P. hydropiperoides*. The apex of the achene is usually slightly exserted, while that of *P. hydropiperoides* is typically included within the rather elongate calyx. For these reasons the present writer is inclined to rank *P. opelousanum* as a species rather than as a variant of *P. hydropiperoides*, recognizing, of course, a close affinity between the two plants.

The calyx of both *P. hydropiperoides* and *P. opelousanum* is usually described as non-glandular, and under the scrutiny of the usual hand-lens no glands are apparent. A compound microscope reveals, especially toward the base of the calyx, small and rather rudimentary glands within the tissues, which resemble, on a much less elaborate scale, the glands of *P. punctatum*. A variant of *P. opelousanum*, described in this paper from certain localities in Massachusetts and Rhode Island, presents a greenish calyx with plainly evident glands. It is in some respects a form intermediate between *P. opelousanum* and *P. punctatum*.

KEY TO THE VARIETIES OF *POLYGONUM HYDROPIPEROIDES* AND *P. OPELOUSANUM*.

Plants perennial (some annual in their northward range): stems upright or decumbent below, glabrous or minutely strigose, never with glandular hairs; leaves mostly lanceolate to lance-linear: ocreae strigose and ciliate: panicles erect: flowers mostly purplish, less commonly whitish or greenish: achenes shining and save in two varieties trigonous, in these both trigonous and lenticular.

¹ Small, Bull. Torr. Bot. Cl. xix. 354 (1892).

² Stone, Pl. So. N. J. 422 (1911).

- a.* Fruiting calyx elongate-ovoid, mostly completely investing the achene *b.*
- b.* Achenes all trigonous *c.*
- c.* Leaves lanceolate *d.*
- d.* Leaves mostly 10–15 cm. long *e.*
- e.* Panicles slender; fascicles not crowded: peduncles mostly simple *f.*
- f.* Margins of ocreolae bristly-ciliate *g.*
- g.* Marginal bristles mostly less than 1 mm. long: pedicels not strongly exerted.
- Stem not strigose.....1. *P. hydropiperoides.*
Stem minutely strigose
- 1a. *P. hydropiperoides*, forma *strigosum.*
- g.* Marginal bristles mostly more than 1 mm. long: pedicels strongly exerted
- 1f. *P. hydropiperoides*, var. *Bushmanum.*
- f.* Margins of ocreolae mostly naked and membranous.....1b. *P. hydropiperoides*, var. *psilostachyum.*
- e.* Panicles rather dense; fascicles crowded: peduncles digitately branched..1c. *P. hydropiperoides*, var. *digitatum.*
- d.* Leaves rarely more than 5–6 cm. long
- 1d. *P. hydropiperoides*, var. *macerum.*
- c.* Leaves ovate or elliptic..1e. *P. hydropiperoides*, var. *sanibelense.*
- b.* Achenes both lenticular and trigonous
- h.* Leaves herbaceous, strigose but not harsh
- 1h. *P. hydropiperoides*, var. *persicarioides.*
- h.* Leaves subcoriaceous, densely and harshly strigose, especially on the midrib and margin
- 1g. *P. hydropiperoides*, var. *asperifolium.*
- a.* Fruiting calyx rhomboid; apex of achene exerted; leaves narrow-lanceolate
- i.* Calyx not evidently glandular, mostly purplish or whitish
2. *P. opelousanum.*
- i.* Calyx glandular, greenish.....2a. *P. opelousanum*, var. *adenocalyx.*

1. *POLYGONUM HYDROPIPEROIDES* Michx. Fl. Bor.-Am. i. 239 (1803). Perennial: stem 3–12 dm. high, slender, upright or more or less decumbent or rooting at the nodes of the woody base, glabrous or barely strigillose, slightly glaucous, greenish or frequently reddened: nodes slightly swollen: internodes 3–4 cm. long: leaves lanceolate, the upper often falcate, 1–1.5 cm. wide, 7–15 cm. long, herbaceous, above usually glabrous, with minute appressed bristles on the mid-vein or minutely scabrous with appressed hairs, below paler and faintly roughened with internal glands, long-cuneate at base, attenuate to an acute or sometimes abruptly blunt apex, entire, with minute appressed bristles: ocreae 1–1.5 cm. long, scarious-membranous, close-cylindric above and becoming inflated at the bases and loose below, truncate, appressed strigose; margin with bristles 2–4 mm. long: inflorescence erect: the panicles 3–6 cm. long, sometimes geminate; fascicles few-flowered and not crowded: peduncles slender, glabrous or with scattering minute appressed bristles: ocreolae 3 mm. long, oblique, obliquely truncate, greenish or often purplish, glabrous below or rarely with minute appressed bristles; the margin fringed with rather stiff bristles 0.5–1 mm. long: pedicels 2.5–3.5 mm. long,

somewhat exserted: flowers perfect, or with either set of essential organs more or less reduced and in extreme types becoming non-functional; the staminate type of flowers opening widely and falling without noticeable accrescence of calyx or fertilization; the pistillate type usually fertilized cleistogamously before opening except when the stamens produce no functional pollen; fertilized flowers with accrescent calyx inclosing the fruit: calyx 1.7–2.2 mm. wide, 2.5–3 mm. long, smaller in sterile flowers, purplish or pinkish, sometimes greenish below, not evidently glandular, 5-parted to below the middle, the lobes rounded; in fruit accrescent, closed, elongate-ovoid, usually entirely enclosing the fruit: stamens 8, included: filaments in the staminate type 1.5–2 mm. long, the anthers well developed and full of pollen; in pistillate types filaments shorter and the anthers reduced in various degrees, sometimes with complete absence of pollen: style 1 mm. long, 3-cleft nearly to the base; stigmas capitate; style-branches recurved in fruit, rarely slightly exserted (style rarely 4-cleft through division of one of the usual segments, with the production of a 4-angled achene): achene 2 mm. wide, 2.5–3 mm. long, trigonous, rounded at base, usually much concaved on the sides, sharp-angled, brown to nearly black, shining, included or the style-branches slightly exserted.—*P. hydropiperoides* Meisner in Mart. Fl. Bras. v. pt. 1: 16 (1855) and in DC. Prodr. xiv. 103 (1856); Gray, Man. 387 (1848); Darlington, Fl. Cestr. ed. 3: 247 (1853); Chapman, Fl. S. States, 389 (1860); Small, Monog. N. A. Polyg. 80 (1895); not of Pursh, Fl. Amer. Sept. 270 (1814). *P. mite* Persoon, Syn. Pl. i. 440 (1805); Pursh, Fl. Am. Sept. i. 270 (1814); Elliott, Sketch. i. 456 (1817); Eaton, Man. ed. 2: 371 (1818); Sprengel, Syst. ii. 253 (1825); Meisner, Monog. Gen. Polyg. Prodr. 75 (1826); Darby, Man. Bot. So. States 298 (1841); not Schrank, Bayr. Fl. i. 668 (1789). *P. barbatum*, Barton, Comp. Fl. Phila. i. 188 (1818); not L. Sp. Pl. 362 (1753). *Persicaria hydropiperoides* Small, Fl. Se. U. S. 378 (1903); Britton & Brown, Ill. Fl. ed. 2, i. 669 (1913).—Swamps, wet sand, peat, and margins of bodies of water, Nova Scotia to southern Quebec and Ontario, south to Florida and Texas. Brazil acc. to Meisner. Reported from a considerably wider range on this continent, but material seen outside these limits not typical. The following specimens selected from a large collection are referred here. QUEBEC: Lac à la Truite, Megantic Co., *Victorin*, no. 11,287. NOVA SCOTIA: wet peat bordering Boot Lake, Annapolis Co., *Fernald & Long*, no. 23,811; rocky swale bordering Dominick Lake east of Springhaven, Yarmouth Co., *Fernald & Long*, no. 23,810; peaty and cobbly beach of large lake north of Saller Lake, Kemptville, Yarmouth Co., *Fernald & Linder*, no. 21,092; wet peaty and sandy margin of Jones Lake, Roseway River, *Fernald & Long*, no. 23,808. MAINE: shallow water, Orono, Sept. 8, 1890, *Fernald*. NEW HAMPSHIRE: shallow water, Contoocook River, East Jaffrey, *Robinson*, no. 569. VERMONT: West Rutland, Sept. 19, 1897, *W. W. Eggleston*. MASSACHU-

SETTS: Essex Co. (from Herb. *Oakes.*); pond, East Nantucket, July 14, 1884, *J. R. Churchill*. RHODE ISLAND: West Providence, July, 1844, *Geo. Thurber*; peaty margins of small ponds between Pilot Hill and South East Point, Block Island, *Fernald et al*, no. 9142. CONNECTICUT: Hartford, Aug. 20, 1900, *A. W. Driggs*. NEW YORK: peaty margins of Black Creek, Alexandria, Jefferson Co., *Fernald et al*, no. 14,272; edge of Tioughnioga R., Cortland, *E. J. Palmer*, no. 416. DISTRICT OF COLUMBIA: river flats, Sept., 1896, *E. S. Steele*. WEST VIRGINIA: Tygart Valley river above Huttonsville, Randolph Co., *Greenman*, no. 355. VIRGINIA: Franklin, Southampton Co., *Heller*, no. 1151; sphagnum swamp southeast of Ewell, *Grimes*, no. 3902. FLORIDA: around ponds, Myers, Lee Co., *Hitchcock*, no. 305: low wet places, Duval Co., *Curtiss*, no. 2402. INDIANA: bog, Gibson, *Lansing*, no. 2827; ditch, Roby, *Lansing*, no. 2673. KENTUCKY: Clear Creek, Bell Co., *Kearney*, no. 410. ILLINOIS: Swan Lake, Calhoun Co., *Metcalf*, no. 1099. TEXAS: Sept., 1870, *Lindheimer*, no. 1116.

1a. Forma **strigosum** (Small), comb. nov. Stem sparingly strigose; leaves and ocreolae also more strigose than in the type: foliage variable, often shorter in proportion than in the type: flowers white or roseate.—*P. hydropiperoides* var. *strigosum* Small, Bull. Torr. Bot. Cl. xix. 355 (1892); Robinson & Fernald in Gray Man. ed. 7: 362 (1907).—*P. hydropiperoides Macouni* Small, Monog. N. A. Polyg. 81 (1895); Britton & Brown, Ill. Fl. i. 560 (1896).—Apparently of no very definite range. The following show the character. QUEBEC: wet places, Gatineau River, Aug. 23, 1884, *J. Macoun*. NEW HAMPSHIRE: West Epping, Sept., 1889, *A. A. Eaton*. VERMONT: Proctor, *Eggles-ton*, no. 1556. MASSACHUSETTS: Nantucket, Aug., 1886, *B. Wood-bridge*. PENNSYLVANIA: Long Pond, *Heller & Hallbach*, no. 662.

1b. Var. **PSILOSTACHYUM** St. John, Proc. Bost. Soc. Nat. Hist. xxxvi. 71 (1921). Leaves lanceolate, 0.8 cm. wide, 4–8 cm. long, glabrescent or glabrous, nearly eciliate: ocreolae glabrous, nearly or quite eciliate rather more scarious and widely flaring than in the type.—Appearing a well-marked variety, with pollen 25–50% defective. Type from Nova Scotia cited in original article. The following agree in habit and leaf-outline, but have ciliate ocreolae and leaves with normal margin and surface characters. OREGON: University Park, Multnomah Co., *Sheldon*, no. 11,306 (as *P. punctatum*); marshes about Portland, *Henderson*, no. 846. WASHINGTON: low bottom lands of the Columbia, W. Klickitat Co., *Suksdorf*, no. 668.

1c. Var. **DIGITATUM** Fernald, RHODORA xxiii. 260 (1921). Leaves linear-lanceolate, long-attenuate, 1–1.5 cm. wide and 13–20 cm. long: inflorescence digitately branched: the fascicles more crowded than in the type: flowers larger and more widely opening.—Types cited in original article. Known only from Nova Scotia.

1d. Var. **macerum**, var. nov., gracillimum 5–6 dm. altum; foliis

lanceolatis 1 cm. latis 5–6 cm. longis: inflorescentiis sparsis plerumque erectis; calycibus purpurascens fructiferis longe rhomboideis achenio arcte adpressis.—Wet lands, Florida. The following is chosen as the type. FLORIDA: in water-edge in a swamp near St. Petersburg, *Mrs. Chas. C. Deam*, no. 2,987 (as *Persicaria hydropiperoides*) TYPE in Gray Herb. These also are characteristic: near Port Orange, *Mrs. Chas. C. Deam*, no. 1684; vicinity of Eustis, Lake Co., *Nash*, no. 1087; swamp, Brevard Co., Okeechobee region, *Fredholm*, no. 5891.

1e. Var. **sanibelense**, var. nov., caulibus crassis internodiis 1–2.5 cm. longis; foliis ovato-lanceolatis vel ellipticis obtusis basi rotundatis 2 cm. latis 6 cm. longis glabris margine venisque exceptis; ocreolis breviter turbinatis coarctatis imbricatis infra glabris marginibus ciliatis ciliis divergentibus.—FLORIDA: Sanibel Island, May 17, 1901, *S. M. Tracy*, no. 7547, TYPE in Gray Herb.

1f. Var. **Bushmanum**, var. nov., foliis lanceolatis; ocreis valde strigosis ciliis vaginas subaequantibus; ochreolis arctis supra turbinatis ciliis 1–1.5 mm. longis; pedicellis 3–3.5 mm. longis valde exsertis: calyce fructifero rhomboideo achenio arcte adpresso.—OKLAHOMA: Sapulpa, Sept. 25, 1895, *Bush*, no. 509, TYPE in Gray Herb. Distributed as *Polygonum* sp. "Common."

1g. Var. **asperifolium**, var. nov., caulibus crassis 0.5–0.9 m. altis: foliis coriaceis strigoso-scabris lanceolato-attenuatis; inflorescentiis subdigitatis; paniculis subdensis; pedunculis plerumque strigosis; acheniis lenticularibus vel trigonis.—CALIFORNIA: East Los Angeles, 1904, *J. C. Nevin*, no. 2, TYPE in Gray Herb. The following are also characteristic: Wilson's Lake, near Pasadena, 1904, *Nevin*, no. 1; vicinity of San Bernardino, alt. 1000–1500 feet, *Parish*, no. 3797.

1h. Var. **persicarioides** (HBK.), comb. nov. Leaves lanceolate, minutely strigose or appressed-bristly: ocreolae often glandular-roughened, slenderly ciliate; the lower often strigose below: calyx sometimes 4-cleft (usually 5-cleft): stamens usually 6–7: achene lenticular or trigonous.—*P. persicarioides* HBK., Nov. Gen. et Sp. ii. 179 (1818): Cham. & Schl. Linnaea, iii. 44 (1828); Meisner in Mart. Fl. Bras. v. pt. 1: 18 (1855) and in DC. Prodr. xiv. 117 (1856); Small, Monog. N. A. Polyg. 68 (1895). *Persicaria persicarioides* (HBK.) Small, Fl. Se. U. S. 378 (1903).—Nebraska, New Mexico (according to Small), Texas, Mexico, Central and South America, mostly in wet places. The following are typical. TEXAS: growing in small pond, near Trinity River, Madison Co., *R. A. Dixon*, no. 423; *Berlandier*, no. 912 in Hb. Mo. Bot. Gard. MEXICO: Hacienda San Miguel, near Batopilas, Chihuahua, *E. Palmer*, no. 137; Hacienda San Bartolo, Tecoman, Colima, Aug. 1, 1905, *P. Goldsmith* (as *P. hydropiperoides*); San José del Cabo, *A. W. Anthony*, no. 340.

2. **POLYGONUM OPELOUSANUM** Riddell in Small, Bull. Torr. Bot. Club, xix. 354 (1892). Perennial, or annual northward: stem 3–9 dm. high, slender, usually erect and freely branching from the woody

base, glabrous, green; nodes somewhat swollen; internodes 3–6 cm. long: leaves narrow-lanceolate or somewhat falcate above, 0.5–1 cm. wide, 3–12 cm. long, glabrous or with minute appressed bristles especially on the veins, glandular-roughened below, attenuate at both ends; margin entire, slightly revolute, with minute appressed bristles: ocreae 1–1.2 cm. long, cylindrical, brown, scarious-membranous, slightly inflated at the base, loose below and at the branching nodes, strigose; the margin with bristles 2–4 mm. long: inflorescence erect or slightly drooping on very slender glabrous peduncles; panicles 1.5–4 cm. long, single, geminate or rarely digitate; fascicles few-flowered, rather close: ocreolae 1.5–2 mm. long, narrow-funnel-form, oblique, obliquely truncate, glabrous below and usually green, in the fruiting stage scarcely overlapping, fringed with spreading bristles 1–2 mm. long: pedicels 1–2.5 mm. long, slightly surpassing the ocreolae: flowers perfect, or with either stamens or style reduced and non-functional as in *P. hydropiperoides*: calyx 1.5–2 mm. long, white or pinkish, 5-parted to below the middle, with rounded not evidently glandular lobes, scarcely accrescent in fruit; then closely appressed to the achene: stamens 8, included: style 1 mm. long, 3-cleft to near the base: its branches in fruit mostly reflexed: achenes 1.2–2 mm. wide, 1.5–2 mm. long, sharply trigonous, rounded or sometimes somewhat acute at base, concaved on the sides, with the recurved stigmas usually exerted.—*P. opelousanum* Riddell, New Orleans Med. Surg. Jour. viii. 760 (1852), acc. to Small; Small, l. c. (1892) and Monog. N. A. Polyg. 78 (1895). *P. hydropiperoides opelousanum* (Small) W. Stone, Pl. So. N. J. 422 (1911). *Persicaria opelousana* (Riddell) Small, Fl. Se. U. S. 378 (1903).—Massachusetts, New Jersey, Virginia to Louisiana and Mexico, inland along the Mississippi basin to Missouri and Illinois, in wet sand or peat. The following are typical. MASSACHUSETTS: Jamaica Plain, *C. E. Faxon*. FLORIDA: ditch, Duval Co., *Fredholm*, no. 5273; Braidentown, *Tracy*, no. 7133. ILLINOIS: Fox Bottom near mud bridge, Aug. 26, 1919, *R. Ridgway*, no. 784. MISSOURI: swampy places, Newton Co., uncommon, *Bush*, no. 321 (as *P. acre* var. *leptostachyum*); Pleasant Grove, *Bush*, no. 278. MISSISSIPPI: Biloxi, Harrison Co., *Pollard*, no. 1046. LOUISIANA: *Riddell*, no. 1431 (accompanied by a MS. description). TEXAS: near Texarkana, Bowie Co., *Heller*, no. 4149. MEXICO: Orizaba, *Botteri*, no. 1163; near Jalapa, Vera Cruz, *Pringle*, no. 8143. Many of the preceding were distributed as *P. hydropiperoides*.

2a. Var. **adenocalyx**, var. nov. calycibus viridibus glandulosis.

Calyx resembling that of *P. punctatum*, but the glands whitish and less evident and plentiful.—Massachusetts, Rhode Island and Connecticut. MASSACHUSETTS: wet peaty shores and hollows, Half-Way Pond, Barnstable, Sept. 4, 1918, *Fernald & Long*, no. 16,766 (as *P. hydropiperoides* var. *opelousanum*), TYPE in Gray Herb.; bare wet sand by Cole's Pond, East Dennis, Barnstable Co.,

Fernald & Long, no. 18,403; wet sandy beach of Long Pond, Brewster, *Fernald & Long*, no. 16,763; Sharon, *S. F. Poole*, no. 292 (as *P. hydropiperoides*); brook near Church St., Winchester, Aug. 15, 1853, *Wm. Boott* (as *P. acre*). RHODE ISLAND: peaty margins of small ponds between Pilot Hill and South East Point, Block Island, *Fernald et al.*, no. 9413; peaty margin of pond near Clay Head, Block Island, *Fernald et al.*, no. 9415 (as *P. hydropiperoides*). CONNECTICUT: wet roadside, Stratford, Sept. 9, 1895, *E. H. Eames* (as *P. acre*, with which it is mixed).

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SOLIDAGO RIGIDA L.

KENNETH K. MACKENZIE.

IN the Linnaean herbarium named *Solidago rigida* is a specimen of the species so currently treated in our manuals (*Gray Proc. Am. Acad.* 17: 179. 1882). Unfortunately, however, the Linnaean species is entirely based upon citations from older authors. No word of original description is given, and in consequence the specimen in the herbarium cannot be considered in determining the proper application of the name, although it was in the Linnaean herbarium when the species was published (*Jackson Proc. Linn. Soc.* (1912) Appendix 139).

The original description is short and reads as follows:

Solidago rigida L.

"10. *Solidago* foliis caulinis ovatis scabris, ramis alternis fastigiatis, corymbis terminalibus. *Hort. cliff.* 410. *Roy. lugdb.* 162.

"*Virga aurea novae angliae, lato rigidoque folio. Herm. par.* 243 t. 243.

"*Habitat in Pennsylvania.*"

Linnaeus *Sp. Pl.* 880. 1753.

The first notice Linnaeus gave of this plant was in 1737, when in *Hortus Cliffortianus* he wrote:

"6. *Solidago* foliis caulinis ovatis, ramis alternis fastigiatis, corymbis terminatricibus.

"*Virga aurea novae angliae, lato rigidoque folio. Herm. parad.* 243. t. 243. *Tournef. inst.* 485. *Vaill. act.* 1720, p. 397 (should be 307).

"*Doria americana, lato rigidoque folio. Boerh lugdb.* 1. p. 98.

"*Crescit in nova York, Americae septentrionalis, Pennsylvaniae.*"

Linnaeus *Hort. Cliff.* 410. 1737.